

**What Is Claimed Is:**

1        1.        A method for allocating computer system resources between  
2 concurrently executing workloads, comprising:  
3                establishing a first resource pool that specifies requirements for each of a  
4 plurality of different computer system resources;  
5                allocating the plurality of different computer system resources to one or  
6 more resource pools, including the first resource pool, to create a resource  
7 allocation, wherein requirements of the first resource pool are satisfied, and  
8 wherein resources allocated to the first resource pool can change over time; and  
9                binding a first process to the first resource pool, so that the first process  
10 has access to the plurality of different computer system resources allocated to the  
11 first resource pool.

1        2.        The method of claim 1, wherein allocating the plurality of different  
2 computer system resources to one or more resource pools involves:  
3                partitioning each of the plurality of different computer system resources  
4 into one or more partitions, wherein a first partition is associated with a first  
5 resource and a second partition is associated with a second resource;  
6                allocating the first partition to a single resource pool, so that only  
7 processes associated with the single resource pool can access the first partition;  
8 and  
9                allocating the second partition to multiple resource pools so that processes  
10 associated with the multiple resource pools can share the second partition.

1        3.        The method of claim 1, wherein prior to allocating the plurality of  
2 different computer system resources, the method further comprises:

3           verifying that collective requirements of the one or more resource pools  
4    can be satisfied; and  
5           if the collective requirements cannot be satisfied, signaling an error  
6    condition.

1           4.       The method of claim 1, wherein establishing the first resource pool  
2    involves selecting a file containing a representation of the first resource pool from  
3    a plurality of possible files.

1           5.       The method of claim 1, further comprising storing a representation  
2    of the resource allocation to non-volatile storage so that the resource allocation  
3    can be reused after a machine failure.

1           6.       The method of claim 5, wherein storing the representation of the  
2    resource allocation involves storing a representation of each of the one or more  
3    resource pools along with associated resources.

1           7.       The method of claim 5, wherein storing the representation of the  
2    resource allocation involves storing an Extensible Markup Language (XML)  
3    representation of the resource allocation.

1           8.       The method of claim 1,  
2    wherein the first resource pool is associated with a first project; and  
3           wherein the first process is one of a plurality of processes associated with  
4    the first project.

1           9.       The method of claim 1, wherein establishing the first resource pool  
2 involves establishing minimum and maximum requirements for a given resource.

1           10.      The method of claim 1, further comprising dynamically adjusting  
2 the resource allocation during system execution.

1           11.      The method of claim 1, wherein the plurality of different computer  
2 system resources can include:

3           central processing units;  
4           semiconductor memory;  
5           swap space; and  
6           networking resources.

1           12.      A computer-readable storage medium storing instructions that  
2 when executed by a computer cause the computer to perform a method for  
3 allocating computer system resources between concurrently executing workloads,  
4 the method comprising:

5           establishing a first resource pool that specifies requirements for each of a  
6 plurality of different computer system resources;

7           allocating the plurality of different computer system resources to one or  
8 more resource pools, including the first resource pool, to create a resource  
9 allocation, wherein requirements of the first resource pool are satisfied, and  
10 wherein resources allocated to the first resource pool can change over time; and  
11           binding a first process to the first resource pool, so that the first process  
12 has access to the plurality of different computer system resources allocated to the  
13 first resource pool.

1           13. The computer-readable storage medium of claim 12, wherein  
2 allocating the plurality of different computer system resources to one or more  
3 resource pools involves:

4           partitioning each of the plurality of different computer system resources  
5 into one or more partitions, wherein a first partition is associated with a first  
6 resource and a second partition is associated with a second resource;

7           allocating the first partition to a single resource pool, so that only  
8 processes associated with the single resource pool can access the first partition;  
9 and

10           allocating the second partition to multiple resource pools so that processes  
11 associated with the multiple resource pools can share the second partition.

1           14. The computer-readable storage medium of claim 12, wherein prior  
2 to allocating the plurality of different computer system resources, the method  
3 further comprises:

4           verifying that collective requirements of the one or more resource pools  
5 can be satisfied; and

6           if the collective requirements cannot be satisfied, signaling an error  
7 condition.

1           15. The computer-readable storage medium of claim 12, wherein  
2 establishing the first resource pool involves selecting a file containing a  
3 representation of the first resource pool from a plurality of possible files.

1           16. The computer-readable storage medium of claim 12, wherein the  
2 method further comprises storing a representation of the resource allocation to

3 non-volatile storage so that the resource allocation can be reused after a machine  
4 failure.

1 17. The computer-readable storage medium of claim 16, wherein  
2 storing the representation of the resource allocation involves storing a  
3 representation of each of the one or more resource pools along with associated  
4 resources.

1 18. The computer-readable storage medium of claim 16, wherein  
2 storing the representation of the resource allocation involves storing an Extensible  
3 Markup Language (XML) representation of the resource allocation.

1 19. The computer-readable storage medium of claim 12,  
2 wherein the first resource pool is associated with a first project; and  
3 wherein the first process is one of a plurality of processes associated with  
4 the first project.

1 20. The computer-readable storage medium of claim 12, wherein  
2 establishing the first resource pool involves establishing minimum and maximum  
3 requirements for a given resource.

1 21. The computer-readable storage medium of claim 12, wherein the  
2 method further comprises dynamically adjusting the resource allocation during  
3 system execution.

1 22. The computer-readable storage medium of claim 12, wherein the  
2 plurality of different computer system resources can include:

3                   central processing units;  
4                   semiconductor memory;  
5                   swap space; and  
6                   networking resources.

1                   23.       An apparatus that allocates computer system resources between  
2                   concurrently executing workloads, comprising:  
3                        an establishment mechanism that is configured to establish a first resource  
4                   pool that specifies requirements for each of a plurality of different computer  
5                   system resources;  
6                        an allocation mechanism that is configured to allocate the plurality of  
7                   different computer system resources to one or more resource pools, including the  
8                   first resource pool, to create a resource allocation, wherein requirements of the  
9                   first resource pool are satisfied, and wherein resources allocated to the first  
10                   resource pool can change over time; and  
11                        a binding mechanism that is configured to bind a first process to the first  
12                   resource pool, so that the first process has access to the plurality of different  
13                   computer system resources allocated to the first resource pool.

1                   24.       The apparatus of claim 23, wherein the allocation mechanism is  
2                   configured to:  
3                        partition each of the plurality of different computer system resources into  
4                   one or more partitions, wherein a first partition is associated with a first resource  
5                   and a second partition is associated with a second resource;  
6                        allocate the first partition to a single resource pool, so that only processes  
7                   associated with the single resource pool can access the first partition; and to

8                   allocate the second partition to multiple resource pools so that processes  
9                   associated with the multiple resource pools can share the second partition.

1                   25.       The apparatus of claim 23, wherein the apparatus additionally  
2                   includes a verification mechanism that is configured to verify that collective  
3                   requirements of the one or more resource pools can be satisfied;  
4                   wherein if the collective requirements cannot be satisfied, the verification  
5                   mechanism is configured to signal an error condition.

1                   26.       The apparatus of claim 23, wherein the establishment mechanism  
2                   is configured to select a file containing a representation of the first resource pool  
3                   from a plurality of possible files.

1                   27.       The apparatus of claim 23, further comprising an archiving  
2                   mechanism that is configured to store a representation of the resource allocation to  
3                   non-volatile storage so that the resource allocation can be reused after a machine  
4                   failure.

1                   28.       The apparatus of claim 27, wherein the archiving mechanism is  
2                   configured to store a representation of each of the one or more resource pools  
3                   along with associated resources.

1                   29.       The apparatus of claim 27, wherein the archiving mechanism is  
2                   configured to store an Extensible Markup Language (XML) representation of the  
3                   resource allocation.

1                   30.       The apparatus of claim 23,

1           wherein the first resource pool is associated with a first project; and  
2           wherein the first process is one of a plurality of processes associated with  
3       the first project.

1           31.       The apparatus of claim 23, wherein the establishment mechanism  
2       is configured to establish minimum and maximum requirements for a given  
3       resource.

1           32.       The apparatus of claim 23, further comprising an adjustment  
2       mechanism that is configured to dynamically adjust the resource allocation during  
3       system execution.

1           33.       The apparatus of claim 23, wherein the plurality of different  
2       computer system resources can include:  
3           central processing units;  
4           semiconductor memory;  
5           swap space; and  
6           networking resources.